

In The United States Patent And Trademark Office

Applicant:	Wayne Boga et al.	Date:	February 23, 2009
Date Filed:	February 6, 2004	Docket No.:	METSO-19
App. No.:	10/774,084	Art Unit:	1794
For:	Seal Strip for a Suction Roll and a Method for Manufacturing It	Examiner:	L. Ferguson

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Appeal Brief Renewed (and corrected)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The Commissioner is hereby authorized to charge any additional fees that may be required with respect to this communication, or credit any overpayment, to Deposit Account No. 50-2663.

1. Real Party In Interest (37 C.F.R. §41.37(c)(1)(i))

This application is assigned to Metso Paper, Inc. a Finnish corporation having offices at Helsinki, Finland.

2. Related Appeals And Interferences (37 C.F.R. §41.37(c)(1)(ii))

There are no related appeals or interferences.

3. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))

Claims 1–14 are canceled.

Claims 15–34 stand rejected

Claims 15–34 are appealed.

4. Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))

All entered.

5. **Summary of the Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))**

(All citations are to the specification, abstract, claims and drawings as originally filed.)

Independent claims 15 and 30 are to a suction roll seal strip (abstract, page 14, line 1) constructed of a material which is sufficiently flexible (page 5, lines 24–25) so that a seal strip with a cross-section of 1.9 cm by 4.8 cm (page 10, lines 1–10) could be bent into a reel with a radius of less than 150 cm, i.e., <1.5 m (page 5, lines 22–23). A suction roll seal strip is used in papermaking machines (page 1, lines 10–11) at the interface between a fixed suction box connected to a source of vacuum (page 7, lines 6–7) and a rotating perforated cylindrical roll (page 6, lines 20–21) which is used to extract water from a paper web during its manufacture (page 1, lines 10–11). The problem with the prior art is that the suction roll seal strips are relatively long, 3–12 meters (page 2, lines 9–10), and are made of rigid and brittle material (page 2, lines 14–15) and so shipping and storage is costly, and the brittle material may result in breaking during manufacture, shipping and installation (page 2, lines 17–21). The invention is a seal strip with sufficient flexibility such that the seal strip can be coiled on a reel with a radius of less than 1.5 m (page 5, lines 21–23) thus facilitating shipping (page 5, lines 24–29).

The **claim 30** preamble provides in detail the meaning of what is claimed i.e., a suction roll seal strip. The suction roll seal strip for placement in a holder (page 6, lines 27–28) of a stationarily supported suction box (page 6, line 20) in a paper machine (page 1, lines 10–11), the suction box being connected to a vacuum source (page 7, lines 6–7), and located inside a perforated cylindrical roll (page 6, lines 20–21) which is mounted for rotation around the suction box (page 6, lines 21–22), wherein the cylindrical roll has an inner surface (page 6, lines 22–23) and wherein the suction box has a gap opening against the cylindrical roll (page 6, lines 25–26), the suction roll seal strip for positioning within the holder (page 6, lines 27–28) to form a seal between the suction box and the inner surface of the cylindrical roll (FIG. 1 at 22) so that the seal strip wipes against the inner surface of the cylindrical roll as

it rotates (page 7, lines 3–4).

The claims dependent from claim 30 are directed to a suction roll seal strip comprising a mixture of more than 50% (i.e., mostly) nitrile rubber and graphite, (page 4, lines 22–24) and said mixture containing wax (page 4, lines 24–25)

Independent claims 16–29 and 31–34 are argued separately and are directed to a suction roll seal strip comprising a mixture of more than 50 % (i.e., mostly) nitrile rubber and graphite, (page 4, lines 22–24) and said mixture containing wax (page 4, lines 24–25).

Claims 17, 26, and 31–34 are argued separately and include in addition to nitrile rubber, graphite, and wax, the limitation that the suction roll seal strip be sufficiently flexible (page 5, lines 24–25) so that a seal strip with a cross-section of 1.9 cm by 4.8 cm (page 10, lines 1–10) could be bent into a reel with a radius of less than 150 cm i.e., <1.5 m (page 5, lines 22–23).

Claims 24–25, 27–29 and 33–34 are argued separately and include a wax with a melting temperature of more than 100°C (page 5, lines 19–20).

Claims 33–34 are argued separately and include the limitation that the suction roll seal strip be sufficiently flexible (page 5, lines 24–25) so that a seal strip with a cross-section of 1.9 cm by 4.8 cm (page 10, lines 1–10) could be bent into a reel with a radius of less than 150 cm i.e., <1.5m (page 5, lines 22–23) and include a material of the seal containing wax with a melting temperature of more than 110°C (page 5, lines 19–20).

6. Grounds of Rejection to Be Reviewed on Appeal (37 C.F.R. §41.37(c)(1)(vi))

1. Whether claims 15 and 30 are unpatentable under 35 U.S.C. 102(b) as being anticipated by Bryand (U.S. 3,139,375), or Naka (U.S. 5,358,163) or Tschudin-Mahrer (U.S. 4,401,716).

2. Whether claims 16–23, and 30–32 are unpatentable under 35 U.S.C. 103(a) as being unpatentable over Frawley Jr. (U.S. 5,876,566) in view of Schubart et al (U.S. 3,975,333) or Selover, Jr. et al (U.S. 4,014,730). [note claim 32 is rejected at page 8 line 15

and page 11 line 4 Office Action June 12, 2008]

3. Whether Claims 24–25, 27–29 and 33–34 are unpatentable under 35 U.S.C. 103(a) as being unpatentable over Frawley Jr. (U.S. 5,876,566) in view of Schubart et al (U.S. 3,975,333) or Selover, Jr. (U.S. 4,014,730) further in view of Sale et al (U.S. 6,258,409). *[note the examiner erred in including claim 26 as a claim limited to using wax with a melting point over 100°C], [it is to be further noted at page 13, line 1 of the Office Action of June 12, 2008 the claims rejected are misstated as 16-21 and 30-31, but are correctly stated at page 13, lines 6-7]*

7. **Argument (37 C.F.R. §41.3(c)(1)(vii))**

Discussion of References Applied by the Examiner

Bryand (U.S. 3,139,375) describes a suction roll assembly employing a honeycomb structure. Honeycomb is described as “formed by a plurality of elongated, thin, wide strips of flexible material....” (col. 1, line 72, to col. 2, line 1). These flexible strips are use to create a rigid honeycomb suction roll. FIG. 3 is described as “showing in section honeycomb openwork of the invention used as an arcuate unit suction box seal” (col. 1, lines 47–49). This seal is created of a honeycomb structure identical with that used to form the suction roll which is, however, secured by epoxy resin to angular frame pieces to create closed cells rather than passageways. (Col. 3, lines 38-44)

Naka (U.S. 5,358,163) discloses a suction roll used for conveying a flexible strip of material (col. 1, lines 12–13). The suction roll of **Naka** does not employ a suction roll seal as defined by the specification.

Tschudin-Mahrer (U.S. 4,401,716) discloses a foam strip of the material such as used for sealing a crack in a masonry wall (col. 2, lines 3–5).

Frawley Jr. (U.S. 5,876,566) discloses a conventional suction roll strip and is discussed in the background of applicant’s specification (page 3, lines 14–16).

Schubart et al (U.S. 3,975,333) teaches a process of vulcanizing rubber with bis

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(2-benzthiazole-dithio)- N,N'-piperazines where the mixture may contain wax (col. 8, lines 60–61; and col. 9, lines 27–30).

Selover, Jr. et al. (U.S. 4,014,730) describes a rubber-impregnated graphite connector, where the impregnating rubber includes paraffin wax (col. 5, lines 45–55). The added waxes are described as “usual vulcanizing agents” (col. 3, lines 3–4). The connector is part of an electrical capacitor (col. 1, lines 11–13 and FIG. 2), and “the primary functions of connector 14 are as a current collector and an inter-cell ionic insulator.” (col. 3, lines 40–41).

Sale et al. (U.S. 6,258,409) describes a filter sheet having its edges sealed with wax (preferably ethylene bis-stearamide wax) which has a melting point of about 110° C to about 180° C (col. 1, lines 9–19). Ethylene bis-stearamide wax (col. 7, line 5) is the wax applicants claim as comprising part of the material of the suction roll seal strip of claims 27 and 34.

1. Rejection of Claims 15 and 30 Under 35 U.S.C. 102(b) over Bryand (U.S. 3,139,375), or Naka (U.S. 5,358,163) or Tschudin-Mahrer (U.S. 4,401,716)

Claims 15 and 30 stand rejected as anticipated by Naka (U.S. 5,358,163) or Tschudin-Mahrer (U.S. 4,401,716) because the examiner has failed to give patentable weight to the preamble of the claims. Claim 15 simply states “A selected suction roll seal strip”, and claim 30 places within the preamble the entire definition of a suction roll seal strip as set forth in the specification (page 6, line 17, to page 7, line 13).

The preamble of claims 15 and 30 a positive limitation which must be considered in determining the patentability of the claims.

The preamble of a claim reciting a purpose or intended use maybe a positive limitation of the claims:

MPEP 2111.02 Effect of Preamble

II. < PREAMBLE STATEMENTS RECITING PURPOSE
OR INTENDED USE

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The claim preamble must be read in the context of the entire claim. The determination of whether preamble recitations are structural limitations or mere statements of purpose or use “can be resolved only on review of the entirety of the [record] to gain an understanding of what the inventors actually invented and intended to encompass by the claim.”....

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim

However, a “preamble may provide context for claim construction, particularly, where ... that preamble's statement of intended use forms the basis for distinguishing the prior art in the patent's prosecution history.” (Citations omitted)

In claim 15 the preamble states simply “*a selected suction roll sealing strip*” and the body of the claim sets forth “*a material selected to allow a seal strip with a cross-section of 1.9 cm by 4.8 cm to be bent into a reel with a radius of less than 150 cm*”. It is difficult to imagine a claim where the preamble was more necessary to “give meaning to” or “to breathe life into” and is thus essential to particularly point out the invention. See, *Bell Communications Research, Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 623, 34 USPQ2d 1816, 1822 (Fed. Cir. 1995). Claim 30 simply provides the definition of the suction roll sealing strip in the terms set out in the specification, as understood by a person of ordinary skill in the art as evidenced by the references set forth in the background and art cited by the examiner: by the examiner 6,436,241; 5,876,566, and set out in the background of the application 5,876,566; 5,746,891; 4,714,523; 2,893,487. Claims 15, and 30 both refer to the suction roll seal strip in the body of the claim, and state on the record, herein, and previously that the claims are limited to a suction roll seal strip.

The examiner concedes that the preamble is a positive limitation during prosecution.

In the first Office action on the merits mailed May 4, 2007, page 4, lines 8–16, the examiner raised the issue that “in the instant case, the preamble merely recites the intended

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use of the structure, and the body of the claim is able to stand alone; therefore, the preamble language has not been accorded patentable weight.” A personal interview was conducted on July 26, 2007, and the Interview Summary states:

Applicant proposed amending the claims to overcome 35 USC 112, second paragraph, objection and preamble issues stated in the non-final office action. Examiner will consider the amendments and arguments upon receipt of Applicant’s response to the office action.

In applicant’s amendment filed on August 6, 2007, page 5, lines 26–28, applicant argued that “[a]s independent claims 15 and 16 have been amended to properly obtain patentable weight for the limitation to a suction roll seal strip, the rejections over Selover, Jr., et al. are overcome.” In the final Office action mailed October 18, 2007, the examiner does not directly refer to the preamble but states “[t]he rejection made under 35 U.S.C. 103(a) as being unpatentable over Selover, Jr. et al.(U.S. 4,014,730) is withdrawn due [to] Applicant amending the claims.” (Page 5, lines 10–11).

In the final Office action the examiner found:

In claims 15 and 30, the phrase, “to allow a seal with a cross-section of 1.9[]cm by 4.8 cm to be bent into a reel with a radius of less than 150 cm”, constitutes a ‘capable of’ limitation and that such a recitation that an element is ‘capable of’ performing a function is not a positive limitation but only requires the ability to so perform.

(Page 3, lines 2–6.) Subsequent to the final Office action, applicant filed an Appeal Brief traversing the new grounds of rejection set forth in the Final Office Action:

Issue 1: Must applicants’ claim limitation “*comprised of a material selected to allow a seal with a cross-section of 1.9 cm by 4.8 cm to be bent into a reel with a radius of less than 150 cm*” be given patentable weight?

([First] Appeal Brief, page 4, lines 22–24.)

In the Office Action reopening prosecution of June 12, 2008, the examiner with “regrets” for the “untimely reopening of the case” withdrew the previous rejections, i.e., the rejections which applicant traversed in the Appeal (Office Action June 12, 2008, page 2, lines 4–5), to reassert the issue already conceded with respect to the weight to be given to the

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preamble limitation to a “suction roll seal strip”.

Law of the Case

Law of the Case is a principal applied to rulings made by a trial court and not challenged on appeal which become controlling for a particular case. This doctrine may not be controlling in patent prosecution, yet the underlying principles of justice are applicable. Claims 15, 30 have but two elements: a suction roll seal set forth in the preamble and the claim body, and a material of a claimed level of flexibility set forth in the body of the claim. Reason and justice breaks down if the examiner is allowed in subsequent Office actions, especially subsequent to an Appeal brief being filed, to alternate between an assertion that the preamble has no weight (first action, action reopening prosecution), and that the specified level of flexibility has little or no patentable weight (Final Action).

Claims 15 and 30 are not anticipated by Bryand (U.S. 3,139,375), or Naka (U.S. 5,358,163) or Tschudin-Mahrer (U.S. 4,401,716).

Bryand (U.S. 3,139,375) FIG.3 is described as “showing in section honeycomb openwork of the invention used as an arcuate unit suction box seal” (col. 1, lines 47–49). The disclosed seal is created of a honeycomb structure identical with that used to form the suction roll which, however, is secured by epoxy resin to angular frame pieces to create closed cells rather than passageways (Col. 3, lines 38–44). With respect to claims 15 and 30, it is clear that the honeycomb structure alone, which may possibly have some flexibility, is not a seal without being secured by epoxy resin to an angular frame piece. Without being secured by epoxy to create cells rather than passages it cannot perform the disclosed function, namely serving the same purpose as a labyrinth type seal (Col. 3, lines 44–50). Thus there is no disclosure, actual or inherent that a honeycomb structure secured by epoxy to an angular frame piece can be bent into a reel with a radius of less than 150 cm.

MPEP 2112 Requirements of Rejection Based on Inherency; Burden of Proof [R-3]

IV. EXAMINER MUST PROVIDE RATIONALE OR
EVIDENCE TENDING TO SHOW INHERENCY

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. ... “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities....’” [Citations omitted.]

Naka (U.S. 5,358,163) discloses a suction roll used for conveying a flexible strip of material (col. 1, lines 12–13). The suction roll of **Naka** does not employ a suction roll seal strip as defined by the specification. The structure which the examiner reads on the claimed suction roll seal strip are the belts 15 and 25 for opening and closing suction holes (col. 3, lines 50–52). Even if belt material matches the claimed flexibility, i.e., that a cross-section of 1.9 cm by 4.8 cm can be bent into a reel with a radius of less than 150 cm, it is not the mere existence of a material of the required flexibility that anticipates applicant’s claims, nor does any structure used in a suction roll as a seal, rather a suction roll sealing strip is a particular structure with a meaning known to those skilled in the art. This known meaning which is a structural limitation to the claims is described and illustrated in the specification and is known to those skilled in the art as evidenced by the art cited by the examiner: 6,436,241; 5,876,566, and references set forth in the background of the application: 5,876,566; 5,746,891; 4,714,523; 2,893,487.

Tschudin-Mahrer (U.S. 4,401,716) discloses a foam strip of material such as used for sealing a crack in a masonry wall (col. 2, lines 3–5). Such foam strip *fails* to define a suction roll sealing strip as claimed.

2. Rejection under 35 U.S.C. 103(a) of Claims 16–23 and 31–32 over Frawley Jr. (U.S. 5,876,566) in view of Schubart et al. (U.S. 3,975,333) or Selover, Jr. et al (U.S. 4,014,730)

Claims 16–23 and 31–32 are directed to a suction roll seal strip, in claim 16 “comprising a mixture of more than 50% nitrile rubber and graphite, and said mixture containing wax”; in claim 31 “and contains wax”. The examiner admits that “Frawley Jr. does

not specifically teach the suction roll seal strip comprises wax along with the rubber and graphite” (page 7, lines 20–21, Office action reopening prosecution dated June 12, 2008.) However, the examiner argues that Schubart teaches a process of vulcanizing rubber, where the mixture may contain wax (page 7, lines 22–23 Office action reopening prosecution dated June, 12, 2008), and that “[i]t would have been obvious to one of ordinary skill in the art to include wax in the vulcanized rubber mixture of Frawley *to achieve the predictable result of improving the sealing properties of the seal strip, as when wax is solidified it can be used as a sealant.*” [Emphasis added.] (Page 8, lines 3–6 Office action reopening prosecution dated June, 12, 2008.) Similarly, Selover, Jr. et al. (U.S. 4,014,730) describes rubber which includes paraffin wax as one of a list of “usual vulcanizing agents”.

The prior art teaches suction roll sealing strips composed of rubber and graphite about which applicants’ specification teaches “[t]he nature of the material is that it is a rigid, brittle structure.” (Page 2, lines 13–15.) Applicants teach forming the suction roll sealing strips of a material which is made flexible by adding wax to a mixture of rubber and graphite. Frawley Jr teaches—what applicants have admitted—that graphite rubber suction roll seal strips are known. Schubart teaches a process of vulcanizing rubber, where the mixture may contain wax. *The examiner’s reasoning is based on an unsupported assertion that adding wax (used as a vulcanizing agent or with vulcanizing agents) is known to improve the sealing properties of the rubber.* The fact that wax may be used as a sealant has no demonstrated relevance as to the function of wax when added to rubber, as (or with) vulcanizing agents.

At most, Schubart. simply teaches that wax is sometimes used as a vulcanizing agent in the formulation of rubber. This is not a rationally articulated reason why a person of ordinary skill in the art would add wax to the suction roll sealing strip of Frawley Jr.

Similarly, Selover, Jr. et al. (U.S. 4,014,730) describes rubber which includes paraffin wax (col. 5, lines 45–55). The added waxes are described as “usual vulcanizing agents” (col. 3, lines 3–4). The examiner asserts that “Selover, Jr. teaches waxes are functionally equivalents of vulcanization agents....”(Page 10, lines 15–17, Office action reopening prosecution, dated June 12, 2008.) The text relied on by the examiner “In the vulcanizing

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treatment, the elastomer is mixed with the usual vulcanizing agents such as accelerators, antioxidants, antiozonants, waxes, stabilizers, and the like...(emphasis added, col. 3, lines 2–5)” is really no different from the disclosure of Schubart and simply indicates wax can be part of a formulation of vulcanizing agents. The examiner has at most suggested that it is possible wax could be added to a suction roll sealing strip as a vulcanizing agent. But the examiner has not provided any rationally articulated reason why the person of ordinary skill in the art would be motivated to do so. That a thing is possible does not make it obvious, that a thing could be does not anticipate. The examiner is not free to simply pick and choose from the prior art the elements of applicants’ claimed invention, using applicants’ claims as a blueprint. See *Sensonics Inc. v. Aerosonic Corp.*, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

Claims 17, 26, and 31–32 argued separately

Claims 17, 26, and 31–32 are rejected over the same combination of references of Frawley Jr. and Schubart, or Selover, Jr. However, claims 17, 26, and 31–32 combine the addition of wax to the material from which the suction roll seal strip is formed, with the requirement that the seal material allow a seal strip with a cross-section of 1.9 cm by 4.8 cm to be bent into a reel with a radius of less than 150 cm or 130 cm. Thus claims 17, 26, and 31–32 require more than that wax be present, but that the material incorporating the wax achieve a certain level of flexibility.

The examiners reasons:

Concerning claim 17, because the suction roll seal strip of the combined references are made of similar materials with a similar weight percentage, it would have been expected from one of ordinary skill in the art for the seal strip of the cited art to be flexible and capable of being bent onto a reel at any cross-section and radius, including a cross-section of 1.9cm by 4.8cm and 150cm radius.

(Page 10, lines 18–22, Office action reopening prosecution, dated June, 12, 2008.)

Suction roll seal strips combining graphite and vulcanized rubber are admitted. The examiner has shown wax is sometimes used as a vulcanizing agent or with a vulcanizing

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agent. This simply doesn't provide rationally articulated reasons for why a suction roll seal strip, of the claimed material (including wax), and *of the claimed flexibility* would be obvious to a person of ordinary skill in the art. We are left with floating unconnected facts: suction roll seal strips combining graphite and vulcanized rubber are known, wax is a known vulcanizing agent. There is no indication that wax, which may be an option for adding as a vulcanizing agent to rubber, should be added to suction roll seal strips, and if it were added to function as a vulcanizing agent, or with the vulcanizing agent, that it would have the effect of producing the claimed flexibility. In considering the foregoing, we must keep the distinct grounds of anticipation and obviousness clearly in mind. Applicants claimed invention is not made obvious by an argument that somewhere in the past a suction roll seal strip which incorporated wax as a vulcanizing agent might have existed, and might have had the claimed flexibility. This proves neither anticipation nor obviousness. MPEP 2112 IV...“Inherency, however, may not be established by probabilities or possibilities...”. There is no basis in the record for the examiner's supposition that adding wax as a vulcanizing agent, would reasonably be expected by a person of ordinary skill in the art to produce *the claimed flexibility* in a suction roll seal strip. To make a *prima facie* case the examiner must articulate rational reasons why a person of ordinary skill in the art would combine references, and arrive at the claimed invention. MPEP §2142 Rev. 6 states that “[t]he examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.”

The record is devoid of anything which would lead a person of ordinary skill in the art to construct applicant's claimed invention.

3. Rejection under 35 U.S.C. 103(a) of Claims 24–25, 27–29 and 33–34 over Frawley Jr. (U.S. 5,876,566), in view of Schubart et al (U.S. 3,975,333) or Selover, Jr. (U.S. 4,014,730), and further in view of Sale et al.(U.S. 6,258,409)

The examiner admits that Frawley Jr., and Schubart et al (or Selover, Jr.) do not meet the limitations of temperature or composition required by claims 24–25, 27–29 and 33–34

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(page 12, lines 8–9; page 13, lines 5–7, Office Action reopening prosecution dated June 12, 2008). Sale et al. (which has no classification or search overlap with Frawley Jr., or Schubart et al. or Selover, Jr.) teaches nothing more than that the wax ethylene bis-stearamide exists, something inherently admitted by the specification. The examiner's stated rationale for why Sale et al. can be combined with Frawley Jr., or Schubart et al. is "because the ethylene bis-stearamide wax improves the integrity of the seal" (Page 12, lines 15–16, Office action reopening prosecution dated June, 12, 2008) makes no sense. Sale et al. teaches applicants' preferred wax (ethylene bis-stearamide) is used for sealing the edge of a filter sheet. The benefits of the wax alone as a seal says nothing about any rational motivation, or reason for combining this particular wax with rubber and graphite to form a suction roll seal strip. If the rule against using applicants' claims as a blueprint is ever to be applied it must be applied in this situation where the only connection between the reference and the claimed invention is the name of the wax. A word search on applicants' claim term is the only possible connection between Sale et al. and the Frawley Jr., Schubart et al., and Selover, Jr. Applicants' claims are to a suction roll seal strip composed of graphite, rubber and wax with a melting point over 100°C, where the wax is added to make the seal more flexible. Sale et al. discloses no relation to a suction roll seal strip, or to the benefits of using ethylene bis-stearamide wax to make a composition of graphite and rubber more flexible, or for any other reason for combining Sale et al. with the teachings of Frawley Jr., and Schubart et al. The mere existence of the wax claimed does not provide some articulated reasoning with some rational underpinning for combining the wax of Sale et al. with the suction roll seal of Frawley Jr.

Claims 33–34 argued separately

Claims 33–34 combine the addition of a wax meeting limitations of temperature or composition with the requirement that the seal material allow a seal strip with a cross-section of 1.9 cm by 4.8 cm to be bent into a reel with a radius of less than 150 cm. Thus claims 33–34 require more than that a wax meeting the limitations of temperature or composition be

present, but that the material incorporating the wax achieve a certain level of flexibility in a suction roll seal strip.

The examiner has articulated no reasoning and no rational underpinning for why the person of ordinary skill in the art would add a wax meeting limitations of temperature or composition to the known composition of graphite and rubber such that a suction roll seal strip with the claimed flexibility is produced.

E. Summary of Argument

Applicants' claims are to a suction roll seal strip, constructed of a material of a certain flexibility, or to a suction roll seal strip of a certain material composition, or to a combination of the claimed material composition, and claimed flexibility. The examiner has the fact (as admitted) that suction roll seal strip composed of vulcanized rubber and graphite are known. The examiner has shown some examples where wax is used as (or possibly with) vulcanizing agents. The examiner has confirmed the existence of applicants' preferred wax ethylene bis-stearamide.

With respect to the claims to a suction roll seal strip of a certain flexibility, the examiner has applied three separate references as anticipating: a first reference to a suction roll seal strip which is in fact not significantly flexible Bryand (U.S. 3,139,375), and applied two references Naka (U.S. 5,358,163) or Tschudin-Mahrer (U.S. 4,401,716) which are flexible sealing strips, which are not *suction roll* seal strips.

With respect to the claimed material composition of a suction roll seal strip, the examiner has raised the mere possibility that wax as (or with) a vulcanizing agent might be used in a suction roll sealing strip. With respect to claimed attributes of the wax used in the composition, the examiner has shown only that applicants' preferred wax exists.

Having shown neither a suction roll seal strip of the claimed flexibility nor of the claimed composition, the examiner has not shown a combination of these claim limitations.

During prosecution issues of definiteness and the necessity of giving weight to the claim limitations to: a suction roll seal strip, and to the claimed flexibility, have been resolved

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in applicants' favor, and it is contrary to reason and justice to reconsider these issues on appeal without proportionate reasons.

Respectfully submitted,



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Claims Appendix (37 C.F.R. §41.3(c)(1)(viii))

15. A selected suction roll seal strip, comprised of a material selected to allow a seal strip with a cross-section of 1.9 cm by 4.8 cm to be bent into a reel with a radius of less than 150 cm, said material defining the selected suction roll seal strip.

16. A suction roll seal strip, comprising a mixture of more than 50% nitrile rubber and graphite, and said mixture containing wax, the mixture being formed into the suction roll seal strip.

17. The seal strip of claim 16, wherein an amount of wax in the mixture is set so that the flexibility of the seal strip when it has a cross-section of 1.9 cm by 4.8 cm permits the seal strip to be bent onto a reel, having a radius of less than 130 cm.

18. The suction roll seal strip of claim 16 wherein the mixture includes 1–15% wax by volume.

19. The suction roll seal strip of claim 18 wherein the mixture includes 2–4% wax by volume.

20. The suction roll seal strip of claim 16 wherein the mixture includes an amount of nitrile rubber of 30-60% by volume, and an amount of graphite 30–60% by volume.

21. The suction roll seal strip of claim 16 wherein the mixture includes 1–15% sulphur or peroxide by mass.

22. The suction roll seal strip of claim 16 wherein the graphite in the mixture is natural graphite.

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23. The suction roll seal strip of claim 16 wherein the graphite in the mixture is synthetic graphite.

24. The suction roll seal strip of claim 16 wherein the wax in the mixture has a melting point more than 100 ° C.

25. The suction roll seal strip of claim 16 wherein the wax in the mixture has a melting point within the range 110–150 ° C.

26. The suction roll seal strip of claim 16 wherein the amount of wax is selected such that a seal strip, with a cross-section of 1.9 by 4.8 cm can be rolled onto a reel with a radius of less than 1.5 m.

27. The suction roll seal strip of claim 16 wherein the wax in the mixture is an ethylene bis-stearamide wax.

28. The suction roll seal strip of claim 27 wherein the wax in the mixture is a N, N'-ethylene bis-stearamide wax.

29. The suction roll seal strip of claim 16 wherein the wax in the mixture is a wax selected from the group consisting of: hydroxy stearamide wax, hydroxy bis-stearamide wax, carnauba wax, esparto wax, polyolefin wax, and amide wax.

30. A suction roll seal strip for placement in a holder of a stationarily supported suction box in a paper machine, the suction box being connected to a vacuum source, and located inside a perforated cylindrical roll which is mounted for rotation around the suction box, wherein the cylindrical roll has an inner surface and wherein the suction box has a gap opening against the cylindrical roll, the suction roll seal strip for positioning within the holder to form a seal between the suction box and the inner surface of the cylindrical roll so that the seal strip wipes against the inner surface of the cylindrical roll as it rotates, the suction roll seal strip comprising: a section of material selected to allow a seal strip with a cross-section of 1.9 cm by 4.8 cm to be bent into a reel with a radius of less than 150 cm.

31. The suction roll seal strip of claim 30 wherein the seal strip is comprised of a mixture of more than 50% nitrile rubber and graphite, and contains wax.

32. The suction roll seal strip of claim 31 wherein the mixture includes 1–15% wax by volume.

33. The suction roll seal strip of claim 32 wherein the wax in the mixture has a melting point within the range of 110–150 ° C.

34. The suction roll seal strip of claim 33 wherein the wax in the mixture is a wax selected from the group consisting of: ethylene bis-stearamide wax, hydroxy stearamide wax, hydroxy bis-stearamide wax, carnauba wax, esparto wax, polyolefin wax, and amide wax.

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Evidence Appendix (37 C.F.R. §41.3(c)(1)(ix))

None

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Related Proceedings Appendix (37 C.F.R. §41.3(c)(1)(x))

None